SOUTHEAST

CHP Technical Assistance Partnerships

PROJECT PROFILE

Procter & Gamble

54-MW Biomass CHP System

Procter & Gamble (P&G) serves nearly 5 billion people around the world with brands like Bounty, Crest, Gillette and Head & Shoulders consumer products. Photo courtesy of WALB.com

Quick Facts

LOCATION: Albany, GA
MARKET SECTOR: Pulp and Paper
GENERATING CAPACITY: 46 MW (net) electricity/425,000 lb/hr steam
FUEL: Discarded tree tops, limbs, branches and scrap wood from local forestry operations as well as crop residuals such as pecan shells, peanut hulls and mill waste sawdust
IN OPERATION SINCE: 2017
EQUIPMENT: Circulating Fluidized Boiler & Steam Turbine
USE OF THERMAL ENERGY: Plant Process Steam
USE OF ELECTRIC ENERGY: Sold to Georgia Power
EMISSIONS CONTROLS: Selective Non-Catalytic Reduction, baghouse, sorbent injection, activated carbon injection
ENVIRONMENTAL BENEFITS: Reduces disposal of waste products to the landfill; reduces facility's GHG emissions
TOTAL PROJECT COST: $200 million

Project Overview

In September 2017, Constellation Energy (a subsidiary of Exelon Corporation) began operation of a 54 MW (46 MW net) biomass combined heat and power (CHP) system at Procter & Gamble's Family Care Division plant in Albany, GA. At over 70 acres under one roof, the Albany plant is the company's second-largest in the United States. The new CHP system is unique with respect to the number of partnerships that collectively drove the project to fruition. The concept for the plant started when Georgia Power issued an RFP for power generated from biomass. To bolster the economics of the project, Georgia Power partnered with Constellation to locate a steam host. Procter and Gamble, who operated a biomass boiler at the Albany plant for over 30 years, agreed to host the new plant. P&G signed a 20-year agreement to purchase steam from the CHP system, which meets 100 percent of the Albany plant's thermal load. Additionally, Georgia Power negotiated a Power Purchase Agreement to buy all of the electricity produced by the system. Finally, the CHP system's excess steam capacity is being sold to the nearby Marine Corp Logistics Base (MCLB) Albany facility. Constellation and Schneider Electric have teamed with MCLB Albany to utilize the excess steam to generate 8.5 MW of electricity, which will be the backbone of the base's new microgrid.

Reasons for CHP

For more than 30 years, the Albany facility successfully used a smaller onsite biomass boiler to convert wood scraps into renewable steam, providing about 30 percent of the plant's thermal energy requirements. P&G, which has a long-term goal of reaching 100 percent renewable energy for its manufacturing sites, has also committed to a target of 30 percent renewable energy by 2020. The 2020 commitment includes both electric and thermal energy requirements. While P&G

has implemented some smaller-scale solar and wind projects, they recognized that a larger project would be necessary to meet this ambitious goal. The new CHP system almost doubles the company's existing renewable energy portfolio to approximately 20 percent. Additionally, the Albany plant was considered a uniquely-qualified location to site a large biomass plant. According to Constellation's Director of Distributed Energy, the area surrounding Albany, Georgia is one of the most "productive and resource-abundant wood baskets in the United States."

In addition to supporting Procter and Gamble's renewable energy goals, the new CHP system supports Georgia Power's goals for increasing its renewable electricity generation portfolio as well MCLB's new microgrid, intended to bolster the site's energy security.

CHP Equipment, Configuration and Operation

The CHP project consists of a 1,037 MMBtu/hr biomass-fired circulating fluidized bed boiler generating 710,000 lbs/hr of steam. The boiler is paired with a 690,000 lb/hr steam turbine capable of generating 54 MW of electricity. The boiler is also capable of combusting up to 350 MMBtu/hr of natural gas, which is only used when the unit is started-up for pre-heating of the combustor. The power generated by the steam turbine is sold to Georgia Power while 100 percent of the steam is sold to Procter and Gamble. The biomass fuel for the boiler includes discarded tree tops, limbs, branches, and scrap wood from forestry operations located within 100 miles of Albany as well as crop residuals such as pecan shells, peanut hulls, and mill waste sawdust. The excess steam produced by the boiler is piped to the nearby MCLB Albany site where a steam turbine is employed to generate an additional 8.5 MW of electricity.

Biomass harvesting will be restricted to a 100-mile radius, and will include forestry residues locally sourced that would otherwise have been left to decay, burn, or dispose of in a landfill. Photo courtesy of Constellation

Lessons To Share

According to Mr. Brenden Quinlivan, Executive Director of Distributed Energy for Constellation, this deal would not have occurred if it wasn't for the public and private partnership including Procter & Gamble, Georgia Power, Constellation, Marine Corps Logistics Base, and the Albany-Dougherty Development Authority, who enabled the use of the land with appropriate financial accommodations for building the project.

> "[The] Albany [CHP Project] is unique in the sense that it is P&G's single largest renewable energy project globally." "Albany is by far the largest, and it's our single biggest renewable energy commitment in our company."
>
> James McCall, Global Product Supply Systems Leader

For More Information

U.S. DOE SOUTHEAST CHP TECHNICAL PARTNERSHIP
Isaac Panzarella, P.E., Director
919-515-0354
ipanzarella@ncsu.edu

PROCTER AND GAMBLE ASSISTANCE
James McCall
Global Product Supply Systems Leader
mccall.jr@pg.com

More CHP Project Profiles:
www.sechptap.org
www.energy.gov/chp

Date Produced: 12/2020